REPORT NUMBER 537-STF-20-004

# CONFORMANCE TESTING FOR 49 CFR 537 AUTOMOTIVE FUEL ECONOMY REPORTS

## BAYERISCHE MOTOREN WERKE AG
## 2020 BMW 330i
## FOUR-DOOR PASSENGER CAR
## NHTSA NO. C20204100

## U.S. DOT SAN ANGELO TEST FACILITY
## 131 COMANCHE TRAIL, BUILDING 3527
## GOODFELLOW AFB, TEXAS 76908

**October 4, 2019**

**FINAL REPORT**

**PREPARED FOR**

**U. S. Department of Transportation**
**National Highway Traffic Safety Administration**
**Enforcement**
**Mail Code: NEF-200, Room W43-481**
**Office of Vehicle Safety Compliance**
**1200 New Jersey Avenue, SE**
**Washington, D.C. 20590**

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Approved By:

Accepted By:

Acceptance Date: 10/9/2019

Technical Report Documentation Page

| | | |
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| 7. Author(s)<br><br>Anthony L. Walden, Test Technician II<br>Tommy H. Oliver, Program Analyst I<br>Maurice Hicks, Safety Compliance Engineer | | 8. Performing Organization Report Number<br><br>STF-DOT-20-537-04 |
| 9. Performing Organization Name and Address<br><br>U. S. DOT San Angelo Test Facility<br>131 Comanche Trail, Building 3527<br>Goodfellow AFB, Texas 76908 | | 10. Work Unit No. (TRAIS)<br><br>11. Contract or Grant No. |
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| 15. Supplementary Notes | | |
| 16. Abstract<br>Conformance validations were conducted on the subject 2020 BMW 330i passenger car in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. DRAFT-TP-537-02 to verify the vehicle's footprint data versus the manufacturer's data in its report pursuant to 49 CFR 537, Automotive Fuel Economy Reports. The test non-conformances were as follows: NONE. | | |
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Form DOT F 1700.7 (8-72)

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SECTION 1

PURPOSE OF CONFORMANCE VALIDATION

## 1.1 PURPOSE OF CONFORMANCE VALIDATION STATEMENT

A 2020 BMW 330i passenger car was tested to determine if the vehicle was in conformance with the requirements of 49 CFR PART 537. All tests were conducted in accordance with NHTSA/Office of Vehicle Safety Compliance (OVSC) Laboratory Test Procedure DRAFT-TP-537-02, dated August 17, 2016.

## 1.2 TEST VEHICLE

The test vehicle was a 2020 BMW 330i passenger car. Nomenclatures applicable to the test vehicle are:

A. Vehicle Identification Number: WBA5R1C0XLFH53825

B. NHTSA Number: C20204100

C. Manufacturer: Bayerische Motoren Werke AG

D. Manufacture Date: 07/2019

## 1.3 TEST DATE

The test vehicle was tested October 3, 2019.

SECTION 2

TEST PROCEDURE AND DISCUSSION OF RESULTS

## 2.1 TEST PROCEDURE

Prior to test, the test vehicle, at its unloaded vehicle weight condition, was inspected for completeness, systems operability, and appropriate fluid levels, i.e. fuel, oil and coolant. The vehicle was then photographically documented as required by the NHTSA/OVSC Test Procedure.

Subsequent events included:

Any possible test obstructions were removed prior to obtaining any test measurements and the vehicle's tire pressures were adjusted, if necessary, to the cold tire pressure indicated on the vehicle Placard or Tire Information Label. The test vehicle was positioned on a clean level surface. The surface was verified to be level within the specifications on all sides of the vehicle (front, rear and both sides).

Track Width measurements were obtained with the use of Tire Edge Determination Tools (TEDTs) and 2000 mm rulers. Each of the four TEDTs was properly positioned on the left side of four vehicle tires. The distances were measured between the left edges of the TEDTs on front of the tires and on the rear of tires. The front and rear axles were both measured and recorded. This was then repeated with the TEDTs on the right side of the tires. The four required measurements from the front axle were used to calculate the front axle track width. The four required measurements from the rear axle were used to calculate the rear axle track width. The vehicle track width was calculated as the average of the front and rear track widths. All three average track width values were recorded.

The Vehicle Wheelbase was obtained using a steel metric tape measure and measurements taken from both sides of the vehicle. Two measurements were taken on each side of the vehicle to determine the wheelbase value for that side of the vehicle. One wheelbase measurement was taken from the forward most edge of the front wheel rim to the rearward most edge of the rear wheel rim. The second wheelbase measurement on the same side of vehicle was from the rearward most edge of the front wheel rim to the forward most edge of the rear wheel rim. This side's wheelbase was calculated by averaging the two measured distances. This was repeated for the opposite side of the vehicle. The vehicle wheelbase was calculated as the average of the left and right side wheelbases.

The Vehicle Footprint is determined by a calculation consisting of the Vehicle Wheelbase multiplied by the Track Width.

The results of this test are compared with the setup information received from the manufacturer based upon the same dimensions submitted for Part 537 pre-and-mid model year reports. The setup information values represent the exact values for the same configuration as the test vehicle. If test results are found to be greater than or equal to the actual configuration values minus the program tolerances, or greater than

the smallest model type footprint values, testing will be concluded. If not, additional repeat testing is required.

Repeat testing. Reposition the test vehicle in accordance with the test procedure. Repeat track width and wheelbase measurements and ensure test-to-test variability is within acceptable tolerances. Compare test results to those from the setup information received from the manufacturer, utilizing the program tolerances. If not within allowable range (i.e. greater than or within the tolerances) of the manufacturer's values but within the allowable test-to-test variability, the tests may represent a non-conformance. The COR must be contacted. The COR provides guidance on whether a subsequent test may be required on a separate but similar vehicle of the same configuration. If repeat test results compared to prior results are outside the allowable test-to-test variability, continue to conduct repeat testing until at least two sets of test results are within allowable program tolerances. Otherwise, the COR must be contacted.

## 2.2 Discussion of Results

The data indicate conformance of the 2020 BMW 330i with all requirements of 49 CFR PART 537.

SECTION 3

TEST DATA

## 49 CFR 537 – TEST DATA SUMMARY

TEST DATE: October 3, 2019 LAB: U.S. DOT San Angelo Test Facility

VEHICLE NHTSA NUMBER: C20204100 MY/MAKE/MODEL: 2020 BMW 330i

**DATASHEET – 1 of 4 Test Vehicle Manufacturer's Reported Information**

| **Field Data** | | | |
|---|---|---|---|
| MY | | 2020 | |
| Make | | BMW | |
| Model | | 330i | |
| Body Type | | Sedan | |
| VIN | | WBA5R1C0XLFH53825 | |
| Stock No. | | C20204100 | |
| Engine Type/Displacement | | 2.0L, 4-cylinder, Twin-Turbo | |
| Transmission Class | | Automatic | |
| Drive System | | RWD | |
| | | **Front and Rear Axles** | |
| Tire Manufacturer/Model | | Pirelli Cinturato P7 | |
| Tire Size | | 225/45R18 | |
| Mileage | | 16 miles | |
| Fuel | | Full | |
| Adjusted Tire Pressure to conform (Y/N) | | Yes | |
| **Label Data** | | | |
| Monroney Label | | Front Axle | Rear Axle |
| Tire Size | | 18" | 18" |
| Manufacturer Certification Label | | Front Axle | Rear Axle |
| Tire Size | | N/A | N/A |
| GAWR (kg) | | 995 | 1160 |
| GVWR (kg) | | 2080 | |
| Tire Placard | Total | Front | Rear |
| Seat Capacity | 5 | 2 | 3 |
| Tire Size | | 225/45R18 | 225/45R18 |
| Required Tire Pressure (kPa) | | 220 | 260 |
| Vehicle Capacity Weight (kg) | | 375 | |
| **Dealer Information** | | | |
| Dealer Name | | Tom Bush BMW | |
| Address | | 9850 Atlantic Blvd.<br>Jacksonville, FL 32225 | |

## 49 CFR 537 – TEST DATA SUMMARY

TEST DATE: October 3, 2019 LAB: U.S. DOT San Angelo Test Facility

VEHICLE NHTSA NUMBER: C20204100 MY/MAKE/MODEL: 2020 BMW 330i

**DATASHEET – 2 of 4 Test Data**

| **Track Width** | | | |
|---|---|---|---|
| Ruler Offset (mm) 250 | **Test 1** | **Test 2** | **Test 3** |
| Front Left Tire Front Measure (mm) | 1580 | | |
| Front Left Tire Rear Measure (mm) | 1584 | | |
| Front Right Tire Front Measure (mm) | 1578 | | |
| Front Right Tire Rear Measure (mm) | 1585 | | |
| Calculated Front Axle Track Width (in) | 62.27 | | |
| Rear Left Tire Front Measure (mm) | 1593 | | |
| Rear Left Tire Rear Measure (mm) | 1591 | | |
| Rear Right Tire Front Measure (mm) | 1593 | | |
| Rear Right Tire Rear Measure (mm) | 1596 | | |
| Calculated Rear Axle Track Width (in) | 62.73 | | |
| Average Front/Rear Axle Track Width (in) | 62.5 | | |

| **Wheelbase** | **Test 1** | **Test 2** | **Test 3** |
|---|---|---|---|
| Left Side OUT-OUT (mm) | 3345 | | |
| Left Side IN-IN (mm) | 2357 | | |
| Calculated Left Side Wheelbase (in) | 112.24 | | |
| Right Side OUT-OUT (mm) | 3345 | | |
| Right Side IN-IN (mm) | 2356 | | |
| Calculated Right Side Wheelbase (in) | 112.22 | | |
| Average Left/Right Wheelbase (in) | 112.2 | | |

| **Footprint** | **Test 1** | **Test 2** | **Test 3** |
|---|---|---|---|
| Calculated Footprint (sq. ft.) | 48.7 | | |

## 49 CFR 537 – TEST DATA SUMMARY

TEST DATE: October 3, 2019 LAB: U.S. DOT San Angelo Test Facility

VEHICLE NHTSA NUMBER: C20204100 MY/MAKE/MODEL: 2020 BMW 330i

**DATASHEET – 3 of 4 Manufacturer's Setup Information (per Part 537) and Surface Measurements**

| **Surface Measurement (less than 2 degrees)** | | | |
|---|---|---|---|
| Front Bumper | 0.20° | Rear Bumper | 0.05° |
| Left Sill | 0.20° | Right Sill | 0.05° |

| **Manufacturer's Setup Information (per Part 537)** | **Front & Rear Axles** |
|---|---|
| Base Tire Size | 225/45R18 |
| Front Track Width (in) | 62.3 |
| Rear Track Width (in) | 63.0 |
| Average Track Width (in) | 62.6 |
| Wheelbase (in) | 112.2 |
| Footprint (sq. ft.) | 48.8 |
| Same configuration as test vehicle | Yes |

## 49 CFR 537– TEST DATA SUMMARY

TEST DATE: October 3, 2019 LAB: U.S. DOT San Angelo Test Facility

VEHICLE NHTSA NUMBER: C20204100 MY/MAKE/MODEL: 2020 BMW 330i

**DATASHEET – 4 of 4 Manufacturer's Reported Information and Test Results**

| Comparison Chart (Test Values ± 0.15) | Y/N |
|---|---|
| Does test 1 indicate conformance? | Y |
| If No: | |
| Are tests 1 & 2 comparable? | |
| Are tests 2 & 3 comparable? | |
| Are tests 1 & 3 comparable? | |
| Are test(s) in tolerance with the manufacturer's reported information? | |

| | Test 1 | Test 2 | Test 3 |
|---|---|---|---|
| Front Track Width (in) | 62.27 | | |
| Rear Track Width (in) | 62.23 | | |
| Average Track Width (in) | 62.5 | | |
| Wheelbase (in) | 112.2 | | |
| Footprint (sq. ft.) | 48.7 | | |

**Tolerances[1]**

Front Track Width + 0.3 in
Rear Track Width + 0.3 in
Average Track Width + 0.3 in
Wheelbase + 0.2 in
Footprint + 0.2 sq. ft.

The tolerances include the manufacturer's design and manufacturing tolerances. If the manufacturer has not provided tolerances, OVSC may assign default values based upon the result of measured vehicles.

Test Conductor: Anthony Walden & Tommy Oliver Date: October 3, 2019

Approval: Maurice Hicks

To be compliant with the CAFE Program, all manufacturer-submitted footprint dimensions must be less than or equal to the OVSC-measured test value. If a manufacturer's reported information value is larger than the corresponding test value, the difference between the two must be less than or equal to the associated program tolerance. If not, the test may represent a non-conformance.

SECTION 4

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

| EQUIPMENT | DESCRIPTION | MODEL/SERIAL NO | CAL.DATE | NEXT CAL. DATE |
|---|---|---|---|---|
| AIR PRESSURE GAUGE | ASHCROFT GENERAL PURPOSE DIGITAL GAUGE | MODEL 02L 100 PSI SERIAL #3093017001 | 12/13/18 | 12/13/19 |
| RULERS | 2000 mm W/STOPS | | N/A | N/A |
| TREAD EDGE DETERMINATION TOOLS (TEDTS) | 30” x 4” x 4” MACHINED I-BEAM WITH A 16” X 1” NOTCH ON BOTTOM FLANGE | | N/A | N/A |
| RULER | STANLEY CARPENTER SQUARE | | N/A | N/A |
| LEVEL | STABIL ELECTRONIC | SERIAL # 37948 | 11/15/18 | 11/15/19 |
| TAPE | WESTWARD 26’ MEASURING | | N/A | N/A |

SECTION 5

PHOTOGRAPHS

2020 BMW 330i
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FIGURE 5.1
FRONT LEFT SIDE OF VEHICLE THREE-QUARTER VIEW

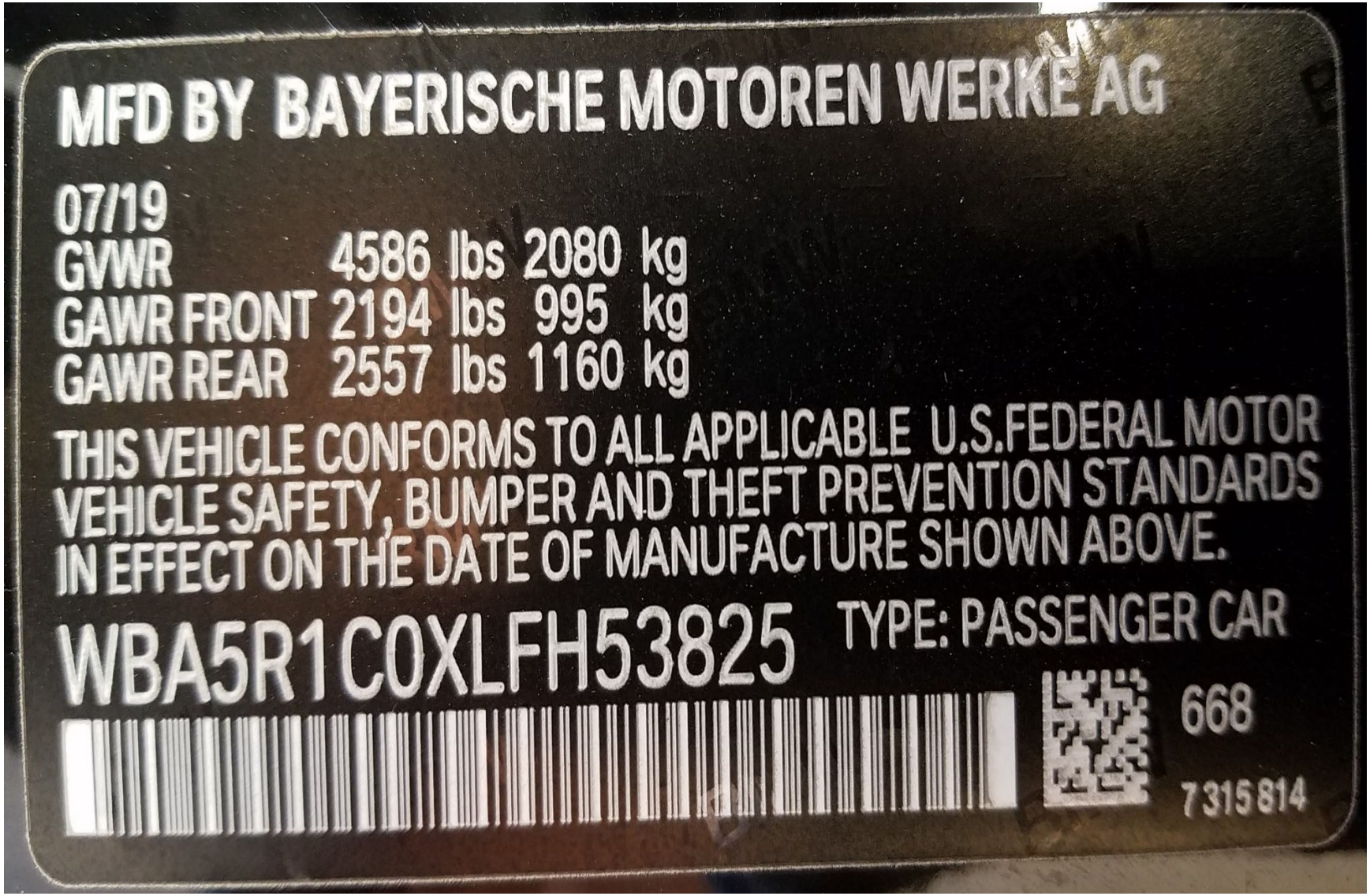


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FIGURE 5.2
VEHICLE CERTIFICATION LABEL

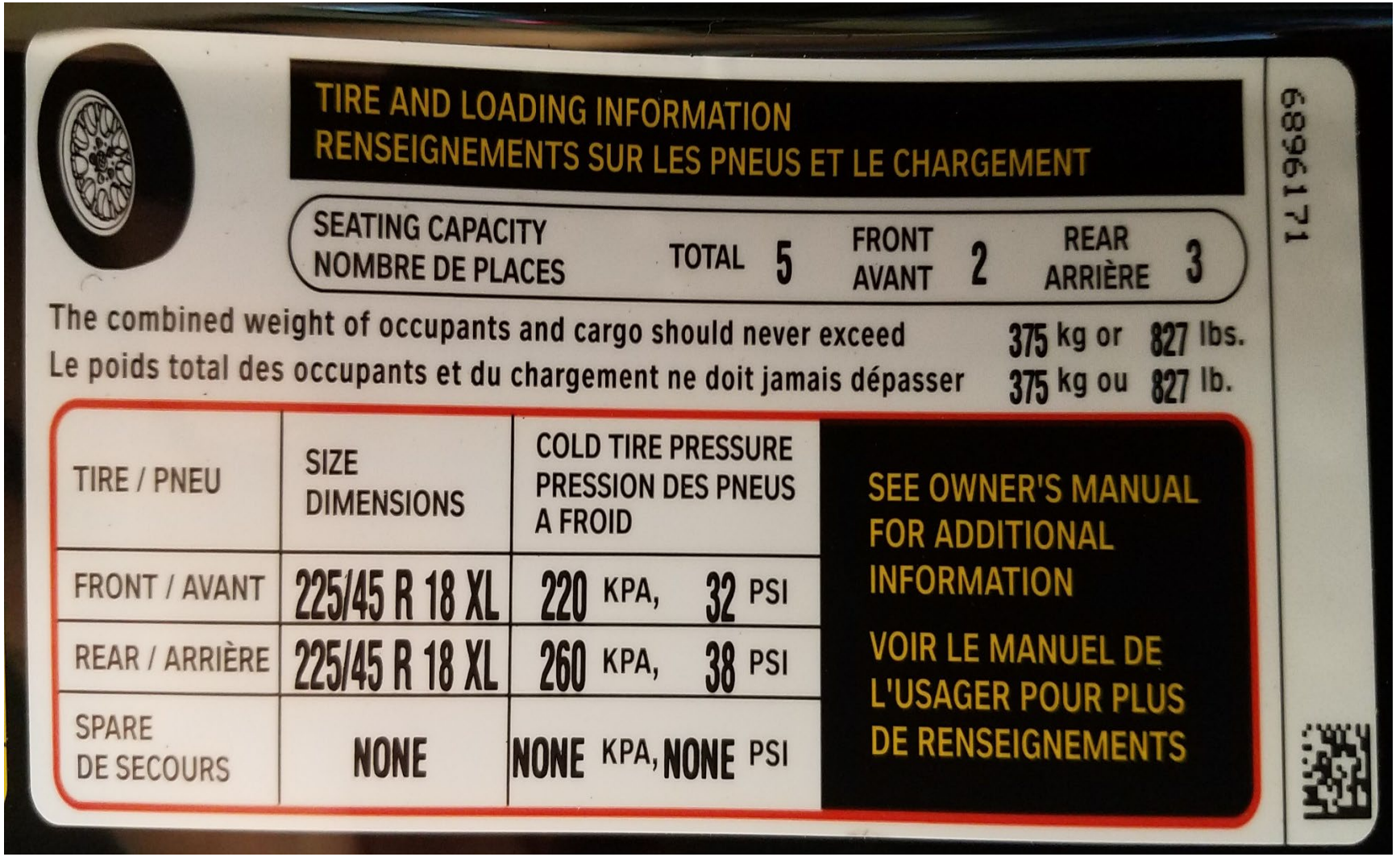


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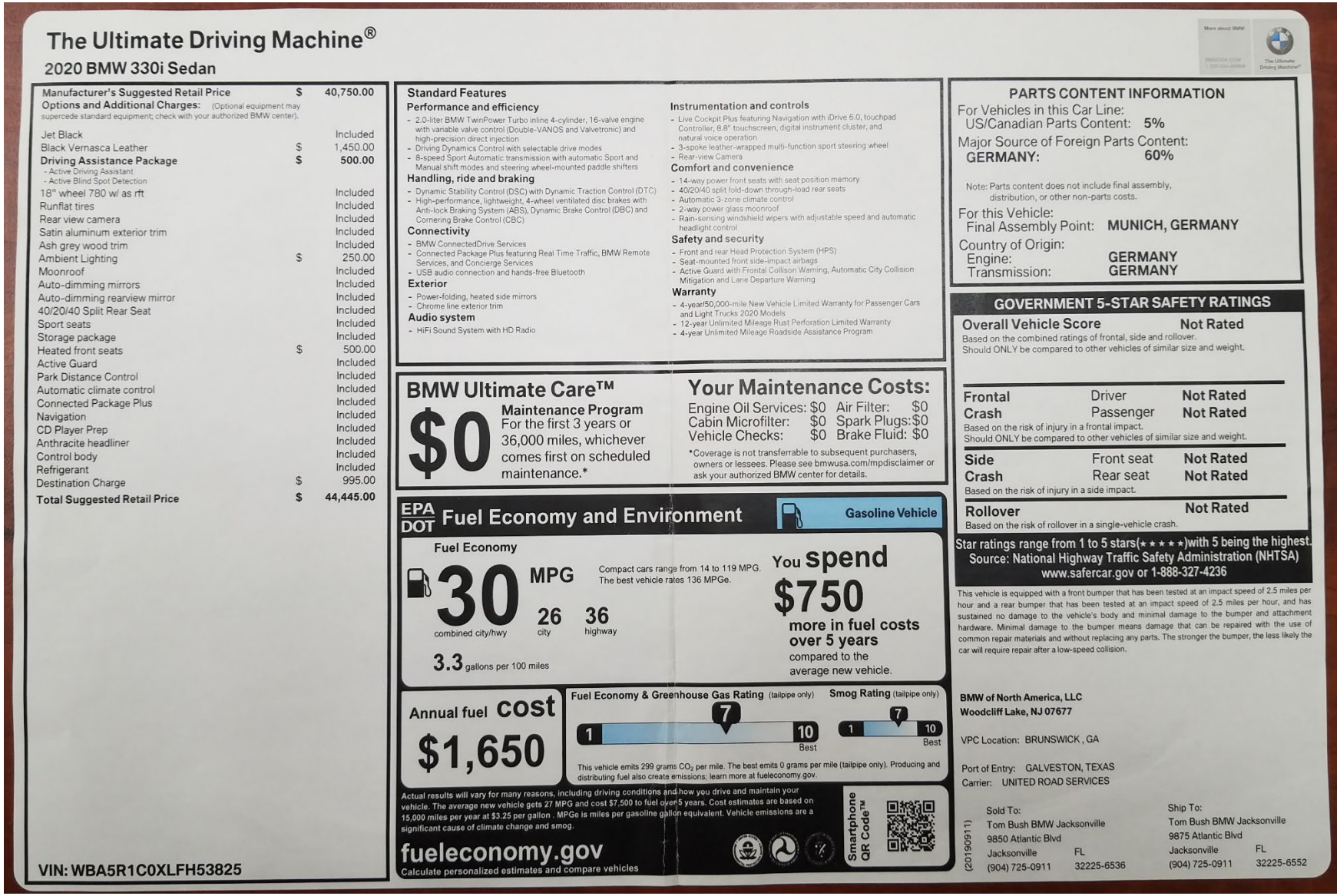
FIGURE 5.3
VEHICLE PLACARD



# The Ultimate Driving Machine®

## 2020 BMW 330i Sedan

| | | |
|---|---|---|
| **Manufacturer's Suggested Retail Price** | **$** | **40,750.00** |
| **Options and Additional Charges:** (Optional equipment may supercede standard equipment; check with your authorized BMW center). | | |
| Jet Black | | Included |
| Black Vernasca Leather | $ | 1,450.00 |
| **Driving Assistance Package** | **$** | **500.00** |
| - Active Driving Assistant | | |
| - Active Blind Spot Detection | | |
| 18" wheel 780 w/ as rft | | Included |
| Runflat tires | | Included |
| Rear view camera | | Included |
| Satin aluminum exterior trim | | Included |
| Ash grey wood trim | | Included |
| Ambient Lighting | $ | 250.00 |
| Moonroof | | Included |
| Auto-dimming mirrors | | Included |
| Auto-dimming rearview mirror | | Included |
| 40/20/40 Split Rear Seat | | Included |
| Sport seats | | Included |
| Storage package | | Included |
| Heated front seats | $ | 500.00 |
| Active Guard | | Included |
| Park Distance Control | | Included |
| Automatic climate control | | Included |
| Connected Package Plus | | Included |
| Navigation | | Included |
| CD Player Prep | | Included |
| Anthracite headliner | | Included |
| Control body | | Included |
| Refrigerant | | Included |
| Destination Charge | $ | 995.00 |
| **Total Suggested Retail Price** | **$** | **44,445.00** |

**VIN: WBA5R1C0XLFH53825**

### Standard Features

**Performance and efficiency**
- 2.0-liter BMW TwinPower Turbo inline 4-cylinder, 16-valve engine with variable valve control (Double-VANOS and Valvetronic) and high-precision direct injection
- Driving Dynamics Control with selectable drive modes
- 8-speed Sport Automatic transmission with automatic Sport and Manual shift modes and steering wheel-mounted paddle shifters

**Handling, ride and braking**
- Dynamic Stability Control (DSC) with Dynamic Traction Control (DTC)
- High-performance, lightweight, 4-wheel ventilated disc brakes with Anti-lock Braking System (ABS), Dynamic Brake Control (DBC) and Cornering Brake Control (CBC)

**Connectivity**
- BMW ConnectedDrive Services
- Connected Package Plus featuring Real Time Traffic, BMW Remote Services, and Concierge Services
- USB audio connection and hands-free Bluetooth

**Exterior**
- Power-folding, heated side mirrors
- Chrome line exterior trim

**Audio system**
- HiFi Sound System with HD Radio

**Instrumentation and controls**
- Live Cockpit Plus featuring Navigation with iDrive 6.0, touchpad Controller, 8.8" touchscreen, digital instrument cluster, and natural voice operation
- 3-spoke leather-wrapped multi-function sport steering wheel
- Rear-view Camera

**Comfort and convenience**
- 14-way power front seats with seat position memory
- 40/20/40 split fold-down through-load rear seats
- Automatic 3-zone climate control
- 2-way power glass moonroof
- Rain-sensing windshield wipers with adjustable speed and automatic headlight control

**Safety and security**
- Front and rear Head Protection System (HPS)
- Seat-mounted front side-impact airbags
- Active Guard with Frontal Collison Warning, Automatic City Collision Mitigation and Lane Departure Warning

**Warranty**
- 4-year/50,000-mile New Vehicle Limited Warranty for Passenger Cars and Light Trucks 2020 Models
- 12-year Unlimited Mileage Rust Perforation Limited Warranty
- 4-year Unlimited Mileage Roadside Assistance Program

### BMW Ultimate Care™

**$0** **Maintenance Program**
For the first 3 years or 36,000 miles, whichever comes first on scheduled maintenance.*

### Your Maintenance Costs:

| | | | |
|---|---|---|---|
| Engine Oil Services: | $0 | Air Filter: | $0 |
| Cabin Microfilter: | $0 | Spark Plugs: | $0 |
| Vehicle Checks: | $0 | Brake Fluid: | $0 |

*Coverage is not transferrable to subsequent purchasers, owners or lessees. Please see bmwusa.com/mpdisclaimer or ask your authorized BMW center for details.

### EPA DOT Fuel Economy and Environment

Gasoline Vehicle

**Fuel Economy**

**30** MPG combined city/hwy — 26 city, 36 highway

3.3 gallons per 100 miles

Compact cars range from 14 to 119 MPG. The best vehicle rates 136 MPGe.

You spend **$750** more in fuel costs over 5 years compared to the average new vehicle.

**Annual fuel cost $1,650**

**Fuel Economy & Greenhouse Gas Rating** (tailpipe only): 7 (1 — 10 Best)

**Smog Rating** (tailpipe only): 7 (1 — 10 Best)

This vehicle emits 299 grams $CO_2$ per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also create emissions; learn more at fueleconomy.gov.

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 27 MPG and cost $7,500 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at $3.25 per gallon . MPGe is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

**fueleconomy.gov**
Calculate personalized estimates and compare vehicles

Smartphone QR Code™

### PARTS CONTENT INFORMATION

For Vehicles in this Car Line:
US/Canadian Parts Content: **5%**
Major Source of Foreign Parts Content:
**GERMANY: 60%**

Note: Parts content does not include final assembly, distribution, or other non-parts costs.

For this Vehicle:
Final Assembly Point: **MUNICH, GERMANY**
Country of Origin:
Engine: **GERMANY**
Transmission: **GERMANY**

### GOVERNMENT 5-STAR SAFETY RATINGS

**Overall Vehicle Score** **Not Rated**
Based on the combined ratings of frontal, side and rollover.
Should ONLY be compared to other vehicles of similar size and weight.

| | | |
|---|---|---|
| **Frontal Crash** | Driver | **Not Rated** |
| | Passenger | **Not Rated** |

Based on the risk of injury in a frontal impact.
Should ONLY be compared to other vehicles of similar size and weight.

| | | |
|---|---|---|
| **Side Crash** | Front seat | **Not Rated** |
| | Rear seat | **Not Rated** |

Based on the risk of injury in a side impact.

**Rollover** **Not Rated**
Based on the risk of rollover in a single-vehicle crash.

Star ratings range from 1 to 5 stars(★★★★★)with 5 being the highest.
Source: National Highway Traffic Safety Administration (NHTSA)
www.safercar.gov or 1-888-327-4236

This vehicle is equipped with a front bumper that has been tested at an impact speed of 2.5 miles per hour and a rear bumper that has been tested at an impact speed of 2.5 miles per hour, and has sustained no damage to the vehicle's body and minimal damage to the bumper and attachment hardware. Minimal damage to the bumper means damage that can be repaired with the use of common repair materials and without replacing any parts. The stronger the bumper, the less likely the car will require repair after a low-speed collision.

**BMW of North America, LLC**
**Woodcliff Lake, NJ 07677**

VPC Location: BRUNSWICK , GA

Port of Entry: GALVESTON, TEXAS
Carrier: UNITED ROAD SERVICES

(20190911)

Sold To:
Tom Bush BMW Jacksonville
9850 Atlantic Blvd
Jacksonville FL 32225-6536
(904) 725-0911

Ship To:
Tom Bush BMW Jacksonville
9875 Atlantic Blvd
Jacksonville FL 32225-6552
(904) 725-0911

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FIGURE 5.4
VEHICLE MONRONEY LABEL


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FIGURE 5.5
TIRE SHOWING MANUFACTURER


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FIGURE 5.6
TIRE SHOWING MODEL


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FIGURE 5.7
TIRE SHOWING SIZE, LOAD, & SPEED INDEX


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FIGURE 5.8
FRONT BUMPER SURFACE MEASUREMENT


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FIGURE 5.9
REAR BUMPER SURFACE MEASUREMENT


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FIGURE 5.10
LEFT SILL SURFACE MEASUREMENT


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FIGURE 5.11
RIGHT SILL SURFACE MEASUREMENT


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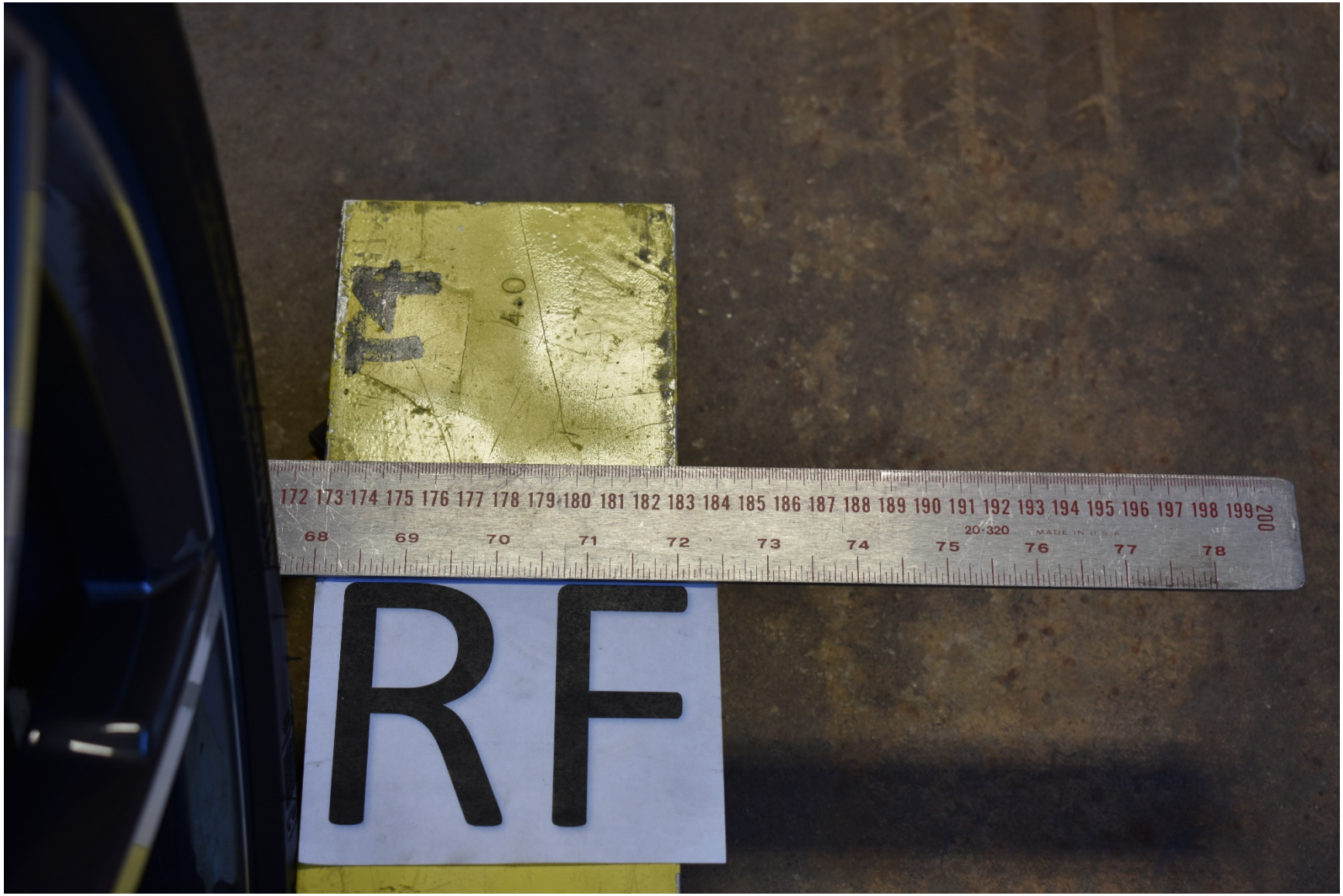
FIGURE 5.12
TIRE EDGE DETERMINATION TOOLS POSITIONED
WHEN MEASURING RIGHT FRONT TRACK WIDTH




2020 BMW 330i
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FIGURE 5.13
FRONT RIGHT TIRE FRONT MEASUREMENT

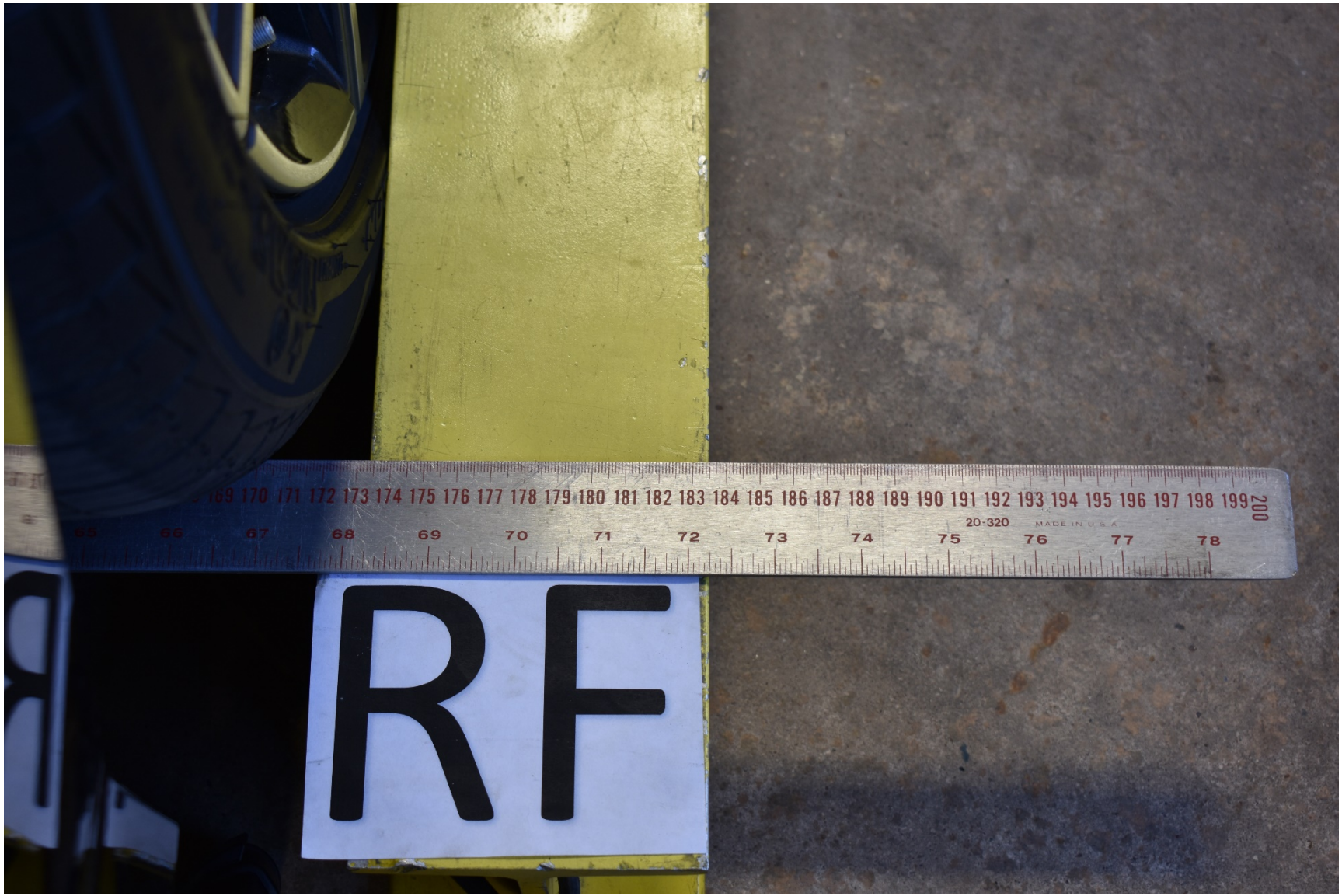


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FIGURE 5.14
FRONT RIGHT TIRE REAR MEASUREMENT


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FIGURE 5.15
TIRE EDGE DETERMINATION TOOLS POSITIONED
WHEN MEASURING LEFT FRONT TRACK WIDTH


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FIGURE 5.16
FRONT LEFT TIRE FRONT MEASUREMENT


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FIGURE 5.17
FRONT LEFT TIRE REAR MEASUREMENT


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FIGURE 5.18
TIRE EDGE DETERMINATION TOOLS POSITIONED
WHEN MEASURING RIGHT REAR TRACK WIDTH

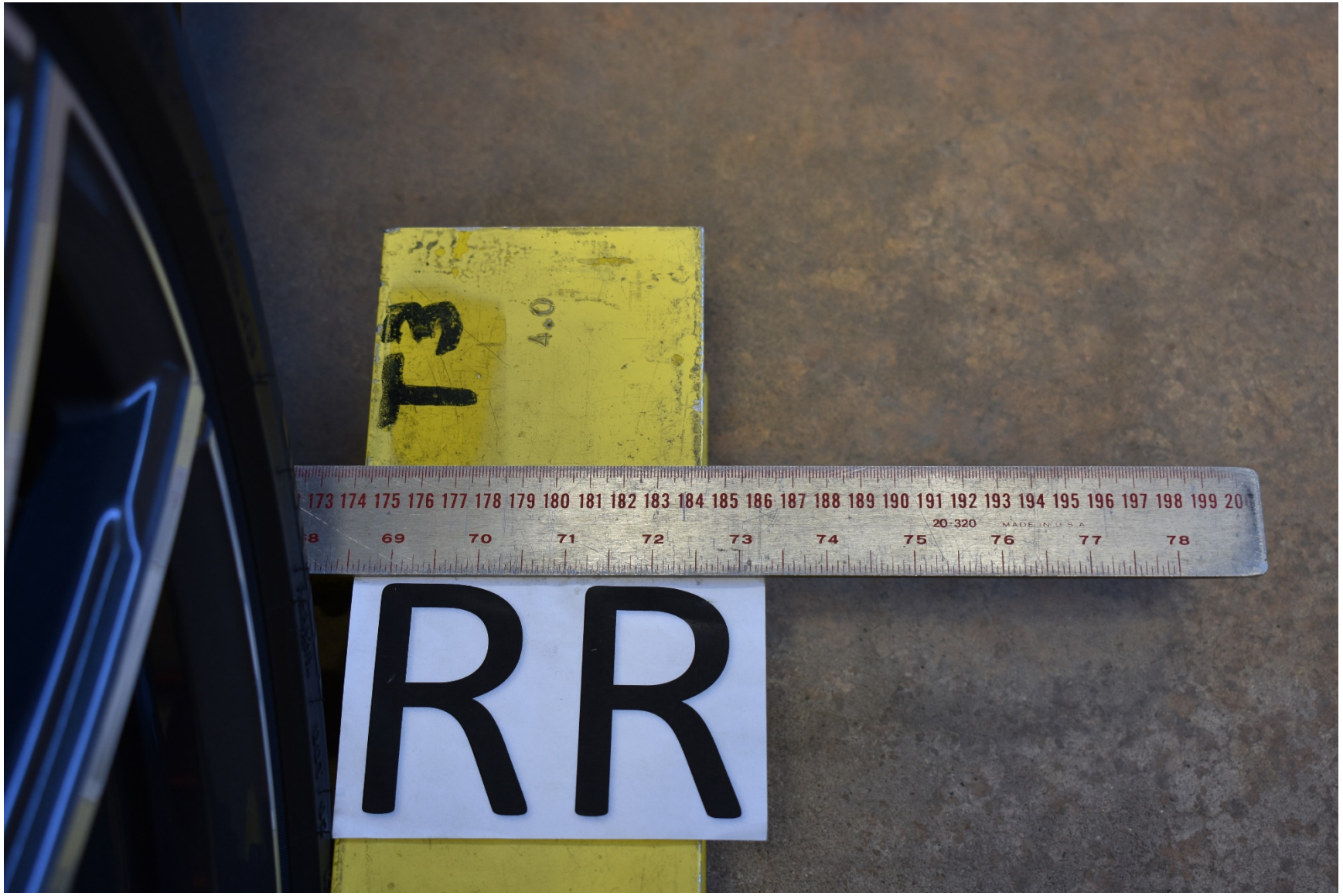


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FIGURE 5.19
REAR RIGHT TIRE FRONT MEASUREMENT


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FIGURE 5.20
REAR RIGHT TIRE REAR MEASUREMENT


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FIGURE 5.21
TIRE EDGE DETERMINATION TOOLS POSITIONED
WHEN MEASURING LEFT REAR TRACK WIDTH


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FIGURE 5.22
REAR LEFT TIRE FRONT MEASUREMENT


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FIGURE 5.23
REAR LEFT TIRE REAR MEASUREMENT


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FIGURE 5.24
MEASURING VEHICLE LEFT SIDE
WHEELBASE INSIDE EDGE TO INSIDE EDGE


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FIGURE 5.25
MEASURING VEHICLE LEFT SIDE
WHEELBASE OUTSIDE EDGE TO OUTSIDE EDGE


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FIGURE 5.26
MEASURING VEHICLE RIGHT SIDE
WHEELBASE INSIDE EDGE TO INSIDE EDGE


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FIGURE 5.27
MEASURING VEHICLE RIGHT SIDE
WHEELBASE OUTSIDE EDGE TO OUTSIDE EDGE